

HYPERNUMBERS AND OTHER EXOTIC STUFF



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Unusual articles - https://en.wikipedia.org/wiki/Wikipedia:Unusual_articles/Mathematics_and_numbers

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Hyperdeterminant - <https://en.wikipedia.org/wiki/Hyperdeterminant>

...some others can be found in https://en.wikipedia.org/wiki/List_of_types_of_numbers

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Introduction to Tropical Geometry - Diane Maclagan and Bernd Sturmfels

<http://www.cs.technion.ac.il/~janos/COURSES/238900-13/Tropical/MaclaganSturmfels.pdf>

https://www.youtube.com/watch?v=1_ZfvQ3o1Ac (friendly introduction)

Min-plus matrix multiplication - https://en.wikipedia.org/wiki/Min-plus_matrix_multiplication

Tropical Geometry - https://en.wikipedia.org/wiki/Tropical_geometry

Amoeba - https://en.wikipedia.org/wiki/Amoeba_%28mathematics%29

Tropical projective space - https://en.wikipedia.org/wiki/Tropical_projective_space

Log semiring - https://en.wikipedia.org/wiki/Log_semiring && Log SumExp - <https://en.wikipedia.org/wiki/LogSumExp>

Tight spans, Isbell completions and semi-tropical modules - Simon Willerton

<https://arxiv.org/pdf/1302.4370.pdf> (one half of the tropical semiring)

Hyperfields for Tropical Geometry I. Hyperfields and dequantization - Oleg Viro

<https://arxiv.org/pdf/1006.3034.pdf> (see section "6. Tropical addition of complex numbers")

Supertropical quadratic forms II: Tropical trigonometry and applications - Zur Izhakian, Manfred Knebusch and Louis Rowen

https://www.researchgate.net/publication/326630264_Supertropical_Quadratic_forms_II_Tropical_Trigonometry_and_Applications

Tropical geometry to analyse demand - Elizabeth Baldwin and Paul Klemperer
http://elizabeth-baldwin.me.uk/papers/baldwin_klemperer_2014_tropical.pdf

International Trade Theory and Exotic Algebras - Yoshinori Shiozawa
<https://link.springer.com/article/10.1007/s40844-015-0012-3>

Complete Tropical Bezout's Theorem and Intersection Theory theory in the tropical projective plane - Gretchen Rimmasch
<https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?article=2504&context=etd>

Max-linear Systems: Theory and Algorithms - Peter Butkovič
<https://www.amazon.com/Max-linear-Systems-Algorithms-Monographs-Mathematics/dp/1447125835>

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Lunar Arithmetic or Dismal Arithmetics - David Applegate, Marc LeBrun and N. J. A. Sloane
<https://cs.uwaterloo.ca/journals/JIS/VOL14/Sloane/carry2.pdf>
<https://www.youtube.com/watch?v=cZkGeR9CWbk>

Balanced Ternary - https://en.wikipedia.org/wiki/Balanced_ternary
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A dictionary of real numbers - J. Borwein - <https://www.amazon.com/Dictionary-Real-Numbers-Jonathan-Borwein/dp/0534128408>

Double-Base Number System for Multi-Scalar Multiplications - Christophe Doche, David R. Kohel and Francesco Sica
<https://www.iacr.org/archive/eurocrypt2009/54790501/54790501.pdf>

Skew binary number system - https://en.wikipedia.org/wiki/Skew_binary_number_system
Two Skew-Binary Numeral Systems and One Application - Amr Elmasry and Jyrki Katajainen
<http://cphstl.dk/Paper/TOCS-2011/journal.pdf>

Zero Displacement Ternary Number System : the most economical way of representing numbers
Fernando Guilherme and Silvano Lobo Pimentel
https://www.researchgate.net/publication/258241283_Zero_Displacement_Ternary_Number_System_the_most_economical_way_of_representing_numbers

Multiple-Base Number System: Theory and Applications - Vassil Dimitrov, Graham Jullien, and Roberto Muscedere

Quote Notation - Eric C. R. Hehner and R. N. S. Horspool - <http://www.cs.toronto.edu/~hehner/ratno.pdf>
https://en.wikipedia.org/wiki/Quote_notation

Beyond the Complexes: Toward a lattice based number system - J. Köpflinger, J. A. Shuster
<https://www.cs.du.edu/~petr/milehigh/2013/Koeplinger.pdf>

Linear Numeral System - Ian Mackie - <http://www.ianmackie.com/papers/linns.pdf>

New approach could sink floating point computation, John Leroy Gustafson
<https://www.nextplatform.com/2019/07/08/new-approach-could-sink-floating-point-computation/>
https://en.wikipedia.org/wiki/Double-precision_floating-point_format

Unum - [https://en.wikipedia.org/wiki/Unum_\(number_format\)](https://en.wikipedia.org/wiki/Unum_(number_format))
"Strength in Numbers: Unums and the Quest for Reliable Arithmetic" by Ferris Ellis - https://www.youtube.com/watch?v=nVNYjmj_qbY

The residue logarithmic number system: Theory and implementation - Mark G. Arnold
https://www.researchgate.net/publication/4156476_The_residue_logarithmic_number_system_Theory_and_implementation

A Low-Power Two-Digit Multi-dimensional Logarithmic Number System Filterbank Architecture for a Digital Hearing Aid -- Roberto Muscedere, Vassil Dimitrov, Graham Jullien and William Miller
https://www.researchgate.net/publication/26532063_A_Low-Power_Two-Digit_Multi-dimensional_Logarithmic_Number_System_Filterbank_Architecture_for_a_Digital_Hearing_Aid

Methodology of numerical computations with infinities and infinitesimals - Yaroslav D. Sergeyev
[http://www.theinfinitycomputer.com/The_second_paper_to_read_\(Lagrange_Lecture\).pdf](http://www.theinfinitycomputer.com/The_second_paper_to_read_(Lagrange_Lecture).pdf)
<https://www.numericalinfinities.com/>

Hetero Base Arithmetic - Raghavendra Lingayya

<https://web.archive.org/web/20210213220933/http://www.numbersystem.org/hetero-base-arithmetic-operations.html>
Raghavendra's Analysis - <https://www.youtube.com/user/raanalysis/videos>
<https://www.medioq.com/XX/Unknown/122535227852808/R-Analysis-For-Real-Mathematics-Education>
<https://bangaloremirror.indiatimes.com/bangalore/others/simplifying-lessons/articleshow/21899416.cms>

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<http://www.jatit.org/volumes/Vol48No1/5Vol48No1.pdf>

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A Number System with Continuous Valued Digits and Modulo Arithmetic - Aryan Sa'ed, Majid Ahmadi and Graham A. Jullien -
https://www.academia.edu/13000520/A_number_system_with_continuous_valued_digits_and_modulo_arithmetic

Hereditary Base notation - https://en.wikipedia.org/wiki/Goodstein%27s_theorem#Hereditary_base-n_notation
New Arithmetic Algorithms for Hereditarily Binary natural numbers - Paul Tarau
<https://www.cse.unt.edu/~tarau/research/2014/HBinX.pdf>

Predicting Improper Fractional Base Integer Characteristics - Billy Dorminy - <http://educ.jmu.edu/~lucassk/Papers/DorminyFracBase.pdf>

Horus Eye Fractions - https://en.wikipedia.org/wiki/Eye_of_Horus#Mathematics
Egyptian geometry - https://en.wikipedia.org/wiki/Egyptian_geometry
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Red auxiliary number - https://en.wikipedia.org/wiki/Red_auxiliary_number

Finger Binary - https://en.wikipedia.org/wiki/Finger_binary

Nemeth braille - https://en.wikipedia.org/wiki/Nemeth_Braille

A History of Mathematical Notations (Dover Books on Mathematics)
<https://www.amazon.com/History-Mathematical-Notations-Dover-Mathematics/dp/0486677664>
The Words of Mathematics : An Etymological Dictionary of Mathematical Terms used in English - Steven Schwartzman
<https://www.amazon.com/Words-Mathematics-Etymological-Dictionary-Mathematical/dp/0883855119>

Bibi-binary - <https://en.wikipedia.org/wiki/Bibi-binary>

The Denormal Logarithmic Number System - Mark G. Arnold Sylvain Collange
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The generalized golden proportions, a new theory of real numbers, and ternary mirror-symmetrical arithmetic - Alexey Stakhov
<http://fs.unm.edu/SN/TheGeneralizedGolden.pdf>

Construction of Algorithms for Parallel Addition - Jan Legersky and Milena Svobodová
https://jan.legersky.cz/talks/ConstructionParAddAlg_WorkshopOnAutomaticSequences.pdf
On-line algorithms for multiplication and division in real and complex numeration systems – Marta Brzicová, Christiane Frougny, Edita Pelantová and Milena Svobodová - <https://arxiv.org/abs/1610.08309v5>

Computing with Exact Real Numbers in a Radix-r System - Alexander Kaganovsky
https://www.researchgate.net/publication/220368828_Computing_with_Exact_Real_Numbers_in_a_Radix-r_System

A variant of Ostrowski numeration - Emmanuel Cabanillas - <https://arxiv.org/pdf/1904.01874v2.pdf>

LCM number system - https://oeis.org/wiki/LCM_numeral_system && Primorial - https://oeis.org/wiki/Primorial_numeral_system
Factorial number system - https://oeis.org/wiki/Factorial_numeral_system && https://en.wikipedia.org/wiki/Factorial_number_system
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Typographical Number Theory - https://en.wikipedia.org/wiki/Typographical_Number_Theory

Gödel numbering - https://en.wikipedia.org/wiki/G%C3%B6del_numbering

Octomatics number system - <http://octomatics.org/>

Sandpiles - Luis David Garcia-Puente - <http://people.reed.edu/~davidp/> && <https://www.youtube.com/watch?v=1MtEUErz7Gg>

Depth-value Notation - <http://iconicmath.com/arithmetic/depthvalue/>

Location arithmetic - https://en.wikipedia.org/wiki/Location_arithmetic

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Japan's ancient secret to better cognitive memory (soroban) - BBC REEL - <https://www.youtube.com/watch?v=s6OmQXCsYt8>

New Mathematical Cuneiform Texts - Jöran Friberg and Farouk N.H. Al-Rawi

<https://www.amazon.com/Mathematical-Cuneiform-Mathematics-Physical-Sciences/dp/3319445960>

Africa and Mathematics From Colonial Findings Back to the Ishango Rods - Dirk Huylebrouck

<https://www.amazon.co.uk/Africa-Mathematics-Colonial-Findings-Ishango/dp/3030040364>

The Movie Great Pyramid K 2019 - Director Fehmi Krasniqi - https://www.youtube.com/watch?v=KMAtkjy_YK4

...some can be found in the following wikipedia links :

https://en.wikipedia.org/wiki/List_of_numeral_systems#By_culture_/time_period

https://en.wikipedia.org/wiki/Category:Non-standard_positional_numeral_systems

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Facial Action Coding System - Carl-Herman Hjortsjö, Paul Ekman and Wallace V. Friesen

https://en.wikipedia.org/wiki/Facial_Action_Coding_System#Codes_for_action_units

Notación de apreciación de intensidad emocional y partitura emocional - Susana Bloch

<https://www.casadellibro.com/ebook-surfeando-la-ola-emocional-ebook/9789568601287/2108202>

Respiratory patterns - http://onlinepdfcatalog.com/images/pdf/albaemoting.cl1-2_1.jpg

Alba Emoting - https://en.wikipedia.org/wiki/Susana_Bloch#Alba_Emoting

Plutchik's Wheel of emotions - https://en.wikipedia.org/wiki/Emotion_classification#Plutchik's_wheel_of_emotions

Interactive wheel - <https://www.6seconds.org/2022/03/13/plutchik-wheel-emotions/>

Heartmath - Doc Lew Childre Jr. - <https://www.heartmath.com/science/>

Emojitocode (code learning with emojis) - <https://www.emojicode.org/> && Emojipedia - <https://emojipedia.org/>

Laban notation - <https://en.wikipedia.org/wiki/Labanotation>

Knust's Dictionary of Kinetography Laban - <https://knustdict.netlify.app/entries>

Geometrography - <https://en.wikipedia.org/wiki/Geometrography>

A Compiler for 3D Machine Knitting - <https://la.disneyresearch.com/wp-content/uploads/A-Compiler-for-3D-Machine-Knitting-Paper.pdf>

Algoritmo del cortejo humano, heterosociabilidad y diálogo venusiano

MAX-VA-CUA-RO Secuenciado - Equipo de Seducción Científica - <https://dinamicassociales.com/>

Las 3 C's y macrohabilidades del Δ Helio - Equipo de Psicología Heterosocial - <https://www.egolandseduccion.com/>

Genealogical numbering systems - https://en.wikipedia.org/wiki/Genealogical_numbering_systems

Symbols and diagrams of the Family Tree - <https://en.wikipedia.org/wiki/Genogram#Symbols>

Six basic patterns of kinship - https://en.wikipedia.org/wiki/Kinship_terminology#Six_basic_patterns_of_kinship

WikiTree (a wiki for genealogists) - <https://www.wikitree.com/>

Reading fluids circuit diagrams : hydraulic & pneumatic symbols

<https://www.valmet.com/media/articles/up-and-running/reliability/FRFluidDwgs1/>

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<https://www.festo-didactic.com/ov3/media/customers/1100/00525179001075223667.pdf>

A Primer on Basic on Basic Hydraulic and Pneumatic Symbols

<https://3dinsider.com/basic-basic-hydraulic-and-pneumatic-symbols/>

Crash Course in Quantum Computing Using Very Colorful Diagrams - Rishabh Anand

<https://towardsdatascience.com/quantum-computing-with-colorful-diagrams-8f7861cfb6da>

Demystifying Quantum Gates One Qubit At A Time - Jason Roell

<https://towardsdatascience.com/demystifying-quantum-gates-one-qubit-at-a-time-54404ed80640>

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Erdős number - https://en.wikipedia.org/wiki/Erd%C5%91s_number

Erdős number project - <https://sites.google.com/oakland.edu/grossman/home/the-erdoes-number-project>

Feynman diagram - https://en.wikipedia.org/wiki/Feynman_diagram

Frege Notation - https://en.wikipedia.org/wiki/Begriffsschrift#Notation_and_the_system

Leśniewski's Systems of Logic and Foundations of Mathematics - Rafal Urbaniak (see chapter 3.3 Leśniewski's Notation)

<https://www.amazon.co.uk/Le%C5%9Bniewskis-Systems-Foundations-Mathematics-Trends/dp/3319344161>

Topology of Polymers - Koya Shimokawa, Kai Ishihara and Yasuyuki Tezuka

<https://www.amazon.com/Topology-Polymers-SpringerBriefs-Mathematics-Materials-ebook/dp/B082FXMBHL>

Xenharmonic (a wiki about musical tuning) - <https://en.xen.wiki/>

The Topos of Music III: Gestures Musical Multiverse Ontologies - Guerino Mazzola, René Guitart, Jocelyn Ho, Alex Lubet, Maria Mannone, Matt Rahaim and Florian Thalmann - (see chapter 'Gesture and Vocalization' and 'Elements of a Future Vocal Gesture Theory')

<https://www.amazon.com/Topos-Music-III-Multiverse-Computational/dp/3319644793>

Universal Script - Matthew DeBlock - <http://www.dsccript.org/> (Uscript is universal logographic language based on math and physics)

Kēlen Ceremonial Interlace Alphabet - <https://www.terjemar.net/kelen/lajathin.php>

Nato phonetic alphabet - https://en.wikipedia.org/wiki/NATO_phonetic_alphabet Q-code https://en.wikipedia.org/wiki/Q_code

Cookbook:Units of measurement - https://en.wikibooks.org/wiki/Cookbook:Units_of_measurement

Mateschef: Un sofrito de números y formas para chefs y gourmets - Claudi Alsina

<https://www.amazon.com/Mateschef-sofrito-n%C3%BAmoros-formas-gourmets/dp/8434422719>

QUANTUM-LANGUAGE-PARSE-SYNTAX-GRAMMAR (<https://dwmlc.com/>)

(an exotic grammar obtained after squashing an assembly programmer against a judge)

https://en.wikipedia.org/wiki/David_Wynn_Miller#Constructed_language_and_linguistic_theories

<https://github.com/lismore/MathematicalInterfaceForLanguage/blob/master/README.md>

: Russell-Jay: Gould. - <https://www.youtube.com/channel/UC2FPVSe66WpLdfoiQem4FzA/videos>

:QUANTUM-GRAMMAR-CHANNEL: - <https://www.youtube.com/c/QUANTUMGRAMMARCHANNEL/videos>

Neuro-optometry - Deborah G Zelinsky - <https://mindeye.com/research/>

Pen and paper exercises - Donalee Markus - <https://www.designsforstrongminds.com/paper-exercises>

The Neuroplasticity Alliance - <https://www.youtube.com/@neuroplasticityalliance/>

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Lin4Neuro (neuroimaging) - https://www.nemotos.net/?page_id=29

Talairach coordinates - https://en.wikipedia.org/wiki/Talairach_coordinates

The End of Mental Illness: How Neuroscience Is Transforming Psychiatry - Daniel G. Amen

<https://www.amazon.com/End-Mental-Illness-Neuroscience-Transforming/dp/1496438159>

The most important lesson from 83,000 brain scans - <https://www.youtube.com/watch?v=esPRsT-lmw8>

Aproximate number system - https://en.wikipedia.org/wiki/Approximate_number_system

Numerical cognition - https://en.wikipedia.org/wiki/Numerical_cognition

Number sense in animals - https://en.wikipedia.org/wiki/Number_sense_in_animals

Together with dyscalculia, ageometresia, dysgraphia, financial illiteracy

Innumeracy - https://en.wikipedia.org/wiki/Innumeracy_%28book%29

Hypernumeracy - <https://www.andnextcomesl.com/2019/10/hypernumeracy.html>

WikiOdour (a wiki about odor metric) - Scentroid - <https://scentroid.com/wikiodour/>

NASA's Chief Sniffer - https://www.youtube.com/watch?v=oRdgmN_Yq3U

The perfume maker in Dubai Gold Souq who can create any fragrance - <https://www.youtube.com/watch?v=5WIu0FxyPw>

A Mathematical Theory for Texture, Texton, Primal Sketch and Gestalt Fields - Song-Chun Zhu

http://www.stat.ucla.edu/~sczhu/papers/UCLA_psych_talk.pdf

Texton - <https://en.wikipedia.org/wiki/Texton>

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A treatise on the analytical geometry of the point, line, circle, and conic sections, containing an account of its most recent extensions, with numerous examples - John Casey - <https://archive.org/details/cu31924001520455>

Modern triangle geometry - https://en.wikipedia.org/wiki/Modern_triangle_geometry

Trilinear Coordinates - <https://mathworld.wolfram.com/TrilinearCoordinates.html>
https://en.wikipedia.org/wiki/Incenter#Trilinear_coordinates

Transformation of trilinear and quadriplanar to and from cartesian coordinates - John B Mertie
http://www.minsocam.org/ammin/AM49/AM49_926.pdf

Special Isocubics in the Triangle Plane - Jean-Pierre Ehrmann and Bernard Gibert
<https://bernard-gibert.pagesperso-orange.fr/files/Resources/SITP.pdf>

The Encyclopedia of Triangle Centers - <https://faculty.evansville.edu/ck6/encyclopedia/ETC.html>

Bicentric Pairs of Points and Related Triangle Centers - Clark Kimberling - <https://forumgeom.fau.edu/FG2003volume3/FG200303.pdf>

Barycentric Coordinates - <https://mathworld.wolfram.com/BarycentricCoordinates.html>

Green Coordinates - Yaron Lipman, David Levin and Daniel Cohen-Or https://www.wisdom.weizmann.ac.il/~yilipman/GC/gc_techrep.pdf

Harmonic Coordinates - Tony DeRose and Mark Meyer - <https://graphics.pixar.com/library/HarmonicCoordinates/paper.pdf>

The barycentric conspiracy - Fabian "ryg" Giesen - <https://fgiesen.wordpress.com/2013/02/06/the-barycentric-conspirac/>

Areal Coordinates - <https://mathworld.wolfram.com/ArealCoordinates.html>

Approach on area coordinate, volume coordinate an their usage in true 3dgis - Gang Liao, Qingyuan Li, Xu Chen and Jiarong Zheng
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Areal Co-ordinate Methods in Euclidean Geometry - Tom Lovering - <https://bmos.ukmt.org.uk/home/areals.pdf>

Synergetics Coordinates - <https://mathworld.wolfram.com/SynergeticsCoordinates.html> (Clifford J. Nelson 's Wolfram Notebooks)

Buckminster Fuller Notebooks - <https://library.wolfram.com/infocenter/MathSource/600/>

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Four Triangle Fractals using Bucky Numbers and Synergetics Coordinates - <https://library.wolfram.com/infocenter/MathSource/754/>

Synergetics Coordinates Applications - Clifford J. Nelson - <https://web.archive.org/web/20040613235632/http://users.adelphia.net/~cnelson9/>

Tetra Space Co-ordinates A tetrahedron-based system of space co-ordinates - Josef Hasslberger - http://history.hasslberger.com/phy/phy_6.htm

Quadray coordinates - https://en.wikipedia.org/wiki/Quadray_coordinates

Polysign Numbers - Tim Golden - <http://www.bandtechnology.com/PolySigned/index.html>

Pacman Product for Polysigned numbers - Tanaka - <https://archive.org/details/polysignedpacmanproduct>

On intertwined polysigned p3 and equatorial geometry - Tanaka - https://archive.org/details/intertwined_polysigned_p3_on_the_equator

Notas Sobre Polisignos Y Objetos Tertiarios – Kujonai - <https://vixra.org/pdf/2002.0570v1.pdf>

Understanding Polysign Numbers the Standard Way - Hagen von Eitzen - <http://www.von-eitzen.de/math/PolysignNumbers.pdf>

Lua Digital: Matemática (Portuguese Edition) Roberto Siqueira Costa

<https://www.amazon.com/Lua-Digital-Roberto-Siqueira-Costa-ebook/dp/B0118HD4V0>

Chromatic Numbers and Ternary Algebra - Kavosh Havaledarnejad

https://www.academia.edu/25274352/Chromatic_Numbers_and_Ternary_Algebra

An Euler phi function for the Eisenstein integers and some applications - Emily Gullerud, Aba Mbirika - <https://arxiv.org/abs/1902.03483>

Tropical projective space - https://en.wikipedia.org/wiki/Tropical_projective_space

Pohlke's theorem - https://en.wikipedia.org/wiki/Pohlke's_theorem

On anharmonic co-ordinates - William Rowan Hamilton - <https://www.emis.de/classics/Hamilton/Anharm.pdf>

Anharmonic coordinates - Henry William Lovett Hime - <https://archive.org/details/anharmoniccoordi00himerich>

The Mathematical Papers of Sir William Rowan Hamilton: Volume 4, Geometry, Analysis, Astronomy, Probability and Finite Differences,

Miscellaneous - <https://www.amazon.com/Mathematical-Papers-William-Rowan-Hamilton/dp/052159216X>

Tripolar coordinates - <https://mathworld.wolfram.com/TripolarCoordinates.html>

The Distances from a Point to the Vertices of a Triangle - O. Bottema and R. Erne - https://link.springer.com/chapter/10.1007/978-0-387-78131-0_8

Spherical quadratic Bézier triangles with chord lengths parameterization and tripolar coordinates in space

Bohumír Bastl, Bert Jüttler, Miroslav Lávička, Josef Schicho and Zbyněk Šír - <http://www.ag.jku.at/pubs/2011bjlsz.pdf>

Lazare Carnot et la généralité en géométrie. Variations sur le théorème dit de Menelaus - Chemla, Karine

http://www.numdam.org/item/RHM_1998__4_2_163_0.pdf (tetrapolar coordinates)

Mémoire sur la Relation qui existe entre les distances respectives de cinq points quelconques dans l'espace,

suivi d'un Essai sur la théorie des transversales - Lazare Carnot (1806) - <https://gallica.bnf.fr/ark:/12148/bpt6k62584x/>

Sense, Signs and Sketches in the Mathematical Invention of Coordination - René Guitart

<http://rene.guitart.pagesperso-orange.fr/textespreprints/thessaloniki%2009%20guitart%20coordination%20thessaloniki%20mars%202010.pdf>

Tripolar Coordinates (straight Line and Circle): Concurrency of Lines Joining Vortices of a Triangle to Opposite Vertices of Triangles on

Its Sides - A. G. Burgess - <https://era.ed.ac.uk/handle/1842/29477>

Gamma Trigonometry : Applications of Extended Sine and Cosine Functions to Engineering - Luis Teia

<https://www.tjoe.org/pub/6kjmqwir/release/2>

Triangular root - https://en.wikipedia.org/wiki/Triangular_number#Triangular_roots_and_tests_for_triangular_numbers

Hedronometry (Dimensionally enhanced Trigonometry) - Blue the hedronometer - <http://daylateanddollarshort.com/mathdocs/>

<https://demonstrations.wolfram.com/CalculusFreeDerivativesOfSineAndCosine/>

A hedronometric theorem of Menger - <https://vdocuments.site/a-hedronometric-theorem-of-menger-day-late-d-a-hedronometric-theorem.html?page=1>

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The Descartes Rule of Sweeps - <https://paperzz.com/doc/8687034/the-descartes-rule-of-sweeps-and-the-descartes-signature>

<https://demonstrations.wolfram.com/DescartesSignatureExplorer/>

Pseudofaces of tetrahedra - <https://paperzz.com/doc/8457999/pseudofaces-of-tetrahedra-the-law-of-cosines-for>

Motivation for spectral graph theory - <https://9to5science.com/motivation-for-spectral-graph-theory>

Spectral Realizations of Polyhedral Skeleta - <https://www.youtube.com/watch?v=zfOf-Q7TL8g>

<https://web.archive.org/web/20100304213630/http://demonstrations.wolfram.com/SpectralRealizationsOfPolyhedralSkeleta/>

A SIX-POINT CEVA-MENELAUS THEOREM - <https://arxiv.org/pdf/1403.0478.pdf>

Trigonometry of a tetrahedron - https://en.wikipedia.org/wiki/Trigonometry_of_a_tetrahedron

Three dimensional geometry, ZOME, and the elusive tetrahedron

https://www.maths.unsw.edu.au/sites/default/files/3dgeom_zome_tetrahedron_seminar.pdf

La géométrie des tétraèdres - Philippe Tilleul

A New and Very Long Proof of the Pythagoras Theorem - Kaushik Basu - <http://kaushikbasu.org/Pythagoras%206.pdf>

Ternary arithmetic, factorization, and the class number one problem - Aram Bingham - <https://arxiv.org/pdf/2002.02059v2.pdf>

Parallelogon - <https://en.wikipedia.org/wiki/Parallelogon>

Trigonal trapezohedral honeycomb - https://en.wikipedia.org/wiki/Trigonal_trapezohedral_honeycomb

Rhombic dodecahedral honeycomb - https://en.wikipedia.org/wiki/Rhombic_dodecahedral_honeycomb

Maxicode - <https://en.wikipedia.org/wiki/MaxiCode>

Solid Geometry with Problems and Applications - H. E. Slaught and N. J. Lennes - <https://www.gutenberg.org/files/29807/29807-pdf.pdf>

Polyhedral angle - https://encyclopediaofmath.org/wiki/Polyhedral_angle

Cubic Pythagoras – Luis Teia (pythagoras with cubes instead of squares)

<https://wonderfuleengineering.com/pythagoras-theorem-has-been-upgraded-to-3d-and-now-requires-a-120-page-proof/>

Geometry of the 3D Pythagoras' Theorem - <https://www.youtube.com/watch?v=QWPuPX5DHHI>

<https://web.archive.org/web/20170922045632/http://www.ccsenet.org/journal/index.php/jmr/article/viewFile/64646/34833>

Fermat's Theorem – a Geometrical View

https://www.researchgate.net/profile/Luis-Teia/publication/312607399_Fermat's_Theorem_-_a_Geometrical_View/links/58863f6d92851c21ff4d5825/Fermats-Theorem-a-Geometrical-View.pdf

Heavenly Mathematics The Forgotten Art of Spherical Trigonometry - Glen Van Brummelen

<https://www.amazon.com/Heavenly-Mathematics-Forgotten-Spherical-Trigonometry/dp/0691175993>

The Theorem of Trithagoras; Pythagoras is for Squares - Dave Mitchell - <https://latticelabyrinths.wordpress.com/2018/01/13/the-theorem-of-trithagoras-pythagoras-is-for-squares-the-mathsjam-2017-five-minute-presentation/>

Pythagoras theorem variation - Claudi Alsina - <http://claudialsina.com/wp-content/uploads/2016/10/newpythlikethms.pdf>

Extended Pythagoras Theorem Using Hexagons - Luis Teia

https://www.researchgate.net/publication/356441337_Extended_Pythagoras_Theorem_Using_Hexagons

Extended Pythagoras Theorem using Triangles, and its Applications to Engineering - Luis Teia

https://www.researchgate.net/publication/357896374_Extended_Pythagoras_Theorem_using_Triangles_and_its_Applications_to_Engineering

[357896374_Extended_Pythagoras_Theorem_using_Triangles_and_its_Applications_to_Engineering](https://www.researchgate.net/publication/357896374_Extended_Pythagoras_Theorem_using_Triangles_and_its_Applications_to_Engineering)

The Eutrigon Theorem - a new* twin to the theorem of Pythagoras

https://www.principlesofnature.com/number_geometry_connections/new_angles_on_triangles_and_theorems_the_eutrigon_theorem.htm

Is the dominance of right triangles and squares justified from a scale structure perspective?

https://www.principlesofnature.com/number_geometry_connections/reassessing_the_dominance_of_right_triangles_and_squares_in_geometry.htm

Duocode, a parallel of the unicode standard for hexagonal typesetting - Alexander Egorov

Hex Grid Geometry for Game Developers - Herman Tulleken - <http://gamelogic.co.za/downloads/HexMath2.pdf>

'Tetrahedral' coordinates in space (generalization of hexagonal coordinates)

<https://math.stackexchange.com/questions/1861635/tetrahedral-coordinates-in-space-generalization-of-hexagonal-coordinates>

Topology Optimization with Tetra-kai-decahedra and Spheroidal Masks - Nikhil Singh and Anupam Saxena

https://www.researchgate.net/publication/358345870_Topology_Optimization_with_Tetra-kai-decahedra_and_Spheroidal_Masks

An Argument For Dozenalism - <https://hexnet.org/content/argument-dozenalism>

<https://hexagon.link/> && <https://hexagontruth.github.io/hexular/> && <https://twitter.com/hexagonalnews>

Hexagonal Awareness - <https://www.youtube.com/channel/UCf-ml0bmw7OJZHZCIB0cx3g/videos>

Polynumbers, Norms, Metrics, and Polyngles - R R Aidagulov and M V Shamolin
https://www.researchgate.net/publication/270597014_Polynumbers_Norms_Metrics_and_Polyngles
Finsler Spaces, Bingles, Polyngles, and Their Symmetry Groups - R. R. Aidagulov and Maxim V. Shamolin
https://www.researchgate.net/publication/270597384_Finsler_Spaces_Bingles_Polyngles_and_Their_Symmetry_Groups

Taxicab Angles and Trigonometry - Kevin Thompson and Tevian Dray - <https://arxiv.org/pdf/1101.2917.pdf>

Divine Proportions: Rational Trigonometry to Universal Geometry - Norman J. Wildberger
<https://www.amazon.com/Divine-Proportions-Rational-Trigonometry-Universal/dp/097574920X>
Wildberger 's channel - <https://www.youtube.com/user/njwildberger>
Rational trigonometry - https://handwiki.org/wiki/Rational_trigonometry

Pascal simplex - https://en.wikipedia.org/wiki/Pascal's_simplex

Using Chinese Dumbass Notation to Find Algebraic Identities Daniel - Liu Daniel Liu
https://www.academia.edu/11576181/Using_Chinese_Dumbass_Notation_to_Find_Algebraic_Identities

Introduction to the General Trigonometry in Euclidian 2D-space - Claude Ziad Bayeh
<http://www.wseas.us/e-library/transactions/mathematics/2012/53-882.pdf>

Plimpton 322 is Babylonian exact sexagesimal trigonometry - Daniel Francis Mansfield and Norman Wildberger
https://www.researchgate.net/publication/319286288_Plimpton_322_is_Babylonian_exact_sexagesimal_trigonometry
Old Babylonian mathematics and Plimpton 322: A new understanding of the OB tablet Plimpton 322
<https://www.youtube.com/watch?v=L24GzTaOllQ>

(6) SOFTWARE ZONE

DATA STRUCTURES*

Treesheet (tree-like spreadsheet) - <http://strlen.com/treesheets/>
Blockchain (demo) - <https://andersbrownworth.com/blockchain/>
Heimer (mind map) - <https://github.com/juzzlin/Heimer>
DAS-UI <https://das-ui.firebaseio.com/> && <https://szymonkaliski.com/writing/2017-09-08-building-das-ui/>
Enso (diagrammatic coding) - <https://enso.org/language>
Orca (procedural sequencers) - <https://github.com/Hundredrabbits/Orca>
Taichi (spatially sparse multi-level data structures) - <https://github.com/taichi-dev/taichi>
Rasdaman (datacube and arrays) - <http://www.rasdaman.org/wiki>
Categorical Data (data-related tasks using category theory) - <https://www.categoricaldata.net/>
Egison (efficient non-linear pattern matching with backtracking for non-free data type) - <https://www.egison.org/>
Eve (uniform data-processing) - <http://witheve.com/>
Fluidinfo (columnar shareable data) - <https://github.com/fluidinfo> && <https://en.wikipedia.org/wiki/Fluidinfo>
MentDB (world wide Data) - https://www.mentdb.org/mentdb_weak.html

STRUCTS* WITH META

Bedrock (meta-distro) <https://bedrocklinux.org/>
Funtoo (meta-distro) - <https://www.funtoo.org/Welcome>
T2 System Development Environment (meta-distro) - <https://t2sde.org/index.cgi/>
DL Linux (meta-meta-distro) - <https://web.archive.org/web/20181221164035/https://www.sudosatirical.com/articles/dl-linux-0-0-1-released/>
Black (reflective) - <http://pillab.is.ocha.ac.jp/~asai/Black/>
Terra (meta-programming) - <http://terralang.org/>
MetaL (meta-language) - <https://www.meta-language.net/faq.html#what>
Rinci (metadata specifications) - <https://metacpan.org/pod/Rinci#ABSTRACT>
Circle (meta-programming) - <https://www.circle-lang.org/>
Hackett (meta-programming) - <https://lexi-lambda.github.io/hackett/>
Elena (polymorphic code) - <https://github.com/ELENA-LANG/elena-lang/wiki/ELENA-Programming-Manual#overview>
Beluga (mechanizing meta-theory) - <https://www.cs.mcgill.ca/~complogic/beluga/index.html>
Hazel (incomplete programs) - <https://hazel.org/>
Autohotkey (gui and scripting automation for windows) - <https://www.autohotkey.com/>
Rosie Pattern (beyond regex) - <https://rosie-lang.org/about/>
Antipurity (self-aware interpreter) - <https://github.com/Antipurity/conceptual>
Multicompiler (defensive compiler) - <https://immunant.com/blog/2018/09/multicompiler/>
Avail (articulate programming) - <https://www.availang.org/about-avail/introduction/index.html>
Push (evolutionary computing) - <https://faculty.hampshire.edu/lspector/push.html>
Wyvern (built-in skill for large-scale design) - <https://wyvernlang.github.io/>
Gen (probabilistic) - <https://probcomp.github.io/Gen/>
Pyro (probabilistic) - <https://pyro.ai/>

Rascal (meta-programming) - <https://www.rascal-mpl.org/>
Pharo (software as objects, immersive) - <https://pharo.org/features>

SOUND*

Gwion - <https://gwion.github.io/Gwion/>
Kronos vesaronilo - <http://kronos.vesaronilo.com/>
Supercollider - <https://supercollider.github.io/>
Faust - <https://faust.grame.fr/>
Chuck - <http://chuck.cs.princeton.edu/>

NETWORKING*

Live Raizo (network simulation) - <https://sourceforge.net/projects/live-raizo/>
P4 (implement specific network behaviours) - <https://p4.org/>
Helena (browsing automation) - <https://helena-lang.org/>
Volunia (rpg-like browser) <http://www.volunia.com/>
Gather (rpg-like meetings) - <https://www.gather.town/>
Lynx (textual browser) - [https://en.wikipedia.org/wiki/Lynx_\(web_browser\)](https://en.wikipedia.org/wiki/Lynx_(web_browser))
Beaker Browser (peer-to-peer Web browser) - <https://beakerbrowser.com/>
Nyx browser (keyboard-driven browser) - <https://github.com/atlas-engineer/next>
Jolie (microservices) - <https://www.jolie-lang.org/>
Daphile (headless music server) - <https://www.daphile.com/>
Skywave linux (software defined radio servers) - <https://skywavelinux.com/>
Gotenna (off-grid mobile mesh) - <https://gotenna.com/>
Manyverse (off-grid social networking) - <https://www.manyver.se/faq/what-is-manyverse>
p2p networking - <https://www.gnunet.org/en/> <https://zeronet.io/> <https://freenetproject.org/>
Eternal-september private news server (usenet) - <http://eternal-september.org/>
Aioe.org public news server (usenet) - <https://news.aioe.org/>
What is the Usenet improvement Project? - <http://twovoyagers.com/improve-usenet.org/>
Fediverse (federated servers for web-publishing) - <https://en.wikipedia.org/wiki/Fediverse>

OPERATING SYSTEM*

XOD.IO (microcontrollers) - <https://xod.io/>
Elemental Processor SIMulator - <https://wepsim.github.io/>
Mikrocodesimulator MikroSim 2010 (microcode) - http://www.mikrocodesimulator.de/index_eng.php
Katai Struct (binary data structures) - <https://kaitai.io/>
Snowdrop OS (16-Bit Operating System) - <http://sebastianmihai.com/snowdrop/>
Turbo Rascal (design of 8-bit/16-bit games)- <https://lemonspawn.com/turbo-rascal-syntax-error-expected-but-begin/>
Tunguska (a ternary computer emulator) - Viktor Lofgren - <http://tunguska.sourceforge.net/>
The Trillium Architecture - Douglas W. Jones - <http://homepage.divms.uiowa.edu/~jones/ternary/trillium.shtml>
Red (full-stack) - <https://www.red-lang.org/p/about.html>
Racket - <https://racket-lang.org/> && Neverlang - <https://cazzola.di.unimi.it/neverlang2.html> (language creation)
Rescatux - <https://www.supergrubdisk.org/rescatux/> && Parted Magic - <https://partedmagic.com/> (OSes for rescue and recovery)
Minix - <https://www.minix3.org/> && 'An Open Letter to Intel' - <https://www.cs.vu.nl/~ast/intel/>
Los Procesadores Intel tienen un Secreto Misterio - <https://www.youtube.com/watch?v=CaLb7waR6eo>
Debian-hurd (debian over Hurd) - <https://www.debian.org/ports/hurd/> https://en.wikipedia.org/wiki/GNU_Hurd
Trisquel (ubuntu over Libre-Linux) - <https://trisquel.info/>
Ratpoison (Window Manager) - <https://www.nongnu.org/ratpoison/>
IceWM (Window Manager) - <https://ice-wm.org/>
RedoxOS - <https://doc.redox-os.org/book/ch01-06-how-redox-compares.html>
Linux From Scratch! - <https://www.linuxfromscratch.org/>

LANGUAGE*

Sono (linguistic study) - <https://github.com/Nallantli/Sono>
Quorum (evidence-oriented) - <https://quorumlanguage.com/reference.html>
Inform7 (interactive narrative, textual adventures) - <http://inform7.com/>
Poliqarp (universal concordancer for large corpora) - <http://poliqarp.sourceforge.net/about.html>
Paper generator - https://en.wikipedia.org/wiki/Paper_generator

GRAPHICS*

Curv (mathematical methods for art design)- <https://github.com/curv3d/curv>
GrarLS (static graphic images) - <http://www.grarls.org/>
KUIML (skin and GUI) - <https://www.bluecataudio.com/Vault/Skins/KUIML/>
Complexities of Color in Computing - Ellen Wondra - <https://www.youtube.com/watch?v=VCvOwoeOgv8>
Dr Huang 's Math Handbook Calculator - <http://drhuang.com/> && <http://drhuang.com/science/mathematics/software/>
Draw2D (diagrams) - <http://www.draw2d.org/draw2d/examples.html>

Threejs (creation of 3D content) - <https://threejs.org/manual/#en/fundamentals>
Video (video editing) - <https://lang.video/>

(7) CYBERNETICS

The Cybernetic Foundation of Mathematics (Semantic graphs and Labeling rules at pages 118 - 121)
https://pat.keldysh.ru/~roman/doc/Turchin/1983_Turchin_The_Cybernetic_Foundation_of_Mathematics.pdf
Valentin Turchin - <https://pat.keldysh.ru/~roman/doc/Turchin/>

Diagnosing the System for Organizations - Stafford Beer
<https://www.amazon.com/Diagnosing-System-Organizations-Stafford-Beer/dp/0471951366>
Beyond Dispute: The Invention of Team Syntegrity
<https://www.amazon.com/Beyond-Dispute-Invention-Team-Syntegrity/dp/0471944513>
Viable system model - https://en.wikipedia.org/wiki/Viable_system_model
How Many Grapes Went Into the Wine - Stafford Beer (see chapter 'The Irrelevance of Automation')
<https://www.amazon.com/Many-Grapes-Went-into-Wine/dp/0471942960>

Cybersyn - <http://www.cybersyn.cl/> && <http://wiki.p2pfoundation.net/Cybersyn>
'Chile Secreto Capítulo 3 : Proyecto Cybersyn' - <https://www.youtube.com/watch?v=4cK7RRH2dX0>

Homeostat - <http://pespmc1.vub.ac.be/ASC/HOMEOSTAT.html> && Variety - [https://en.wikipedia.org/wiki/Variety_\(cybernetics\)](https://en.wikipedia.org/wiki/Variety_(cybernetics))

Engineering cybernetics: 60 years in the making - Zhiqiang Gao
https://www.researchgate.net/publication/271917376_Engineering_cybernetics_60_years_in_the_making
Engineering Cybernetics - Hsue-Shen Tsien [Qian Xuesen] - <https://babel.hathitrust.org/cgi/pt?id=uc1.b3734950&view=1up&seq=7>
Man–Machine–Environment System Engineering Proceedings of the 17th International Conference on MMESE - S. Long and B. Dhillon

The energy evolution - <https://www.amazon.com/Energy-Evolution-Schaubergers-Eco-technology-Schauberger/dp/B00IGYQ24U>
The Fertile Earth - <https://www.amazon.com/Fertile-Earth-Agriculture-Fertilisation-Ecotechnology/dp/B01FGORR8M>

Cypherpunk - <https://en.wikipedia.org/wiki/Cypherpunk>

Plexil (robotics and systems) - <http://plexil.sourceforge.net/wiki/index.php/Overview>
Modelica (language for modeling of cyber-physical systems) - <https://modelica.org/modelicalanguage.html>

Resource Based Economy - https://www.youtube.com/watch?v=_EkMjTnWk14 && <https://www.resourcebasedeconomy.org/>
Center for Resource Management - <https://www.thevenusproject.com/center-for-resource-management/>
Self Erecting Structures - <https://www.youtube.com/watch?v=CM8bNZTvX3A>
Comparison with current technologies - <https://www.youtube.com/watch?v=T9c821s9mjw>
RBE TVP research center mix - <https://www.youtube.com/watch?v=Jy967Y0OsWY>

Destiny and Control in Human Systems Studies in the Interactive Connectedness of Time - Charles Muses
<https://www.amazon.co.uk/Destiny-control-human-systems-chronotopology/dp/157898727X>
SUPL (Syntactic Universal Programming Language): a new dimension in software design and artificial intelligence
How to make a stupid machine clever by cybernetically opportunistic programming
Cybernetics today and tomorrow: The place of hypernumbers

(8) NUMERALS ON CONSCIOUSNESS

Cognitive-Theoretic Model of the Universe (CTMU) - Christopher Langan - <http://hology.org/>
Chris Langan on IQ, The Singularity, Free Will, Psychedelics, CTMU, and God - <https://www.youtube.com/watch?v=N-bRM1kYuNA>
CTMU Wiki - <https://ctmucommunity.org/wiki/> && CTMU Papers <http://hology.org/ctmu-papers/>
Interview of Langan by Michael Knowles - <https://www.youtube.com/watch?v=11-ckSz6FrQ>
Chris Langan A Kastrup on Consciousness, Metaphysics, Computation, and God - <https://www.youtube.com/watch?v=HsXxgQy4xLQ>

La Teoria Sintérgica - Jacobo Grinberg-Zylberbaum
<https://www.amazon.com/Teor%C3%ADa-Sintérgica-Spanish-Jacobo-Grinberg-Zylberbaum/dp/B08JB1XL3C>

International Journal of Mathematics and Consciousness - <http://www.ijmac.com/papers>
Consciousness Is All There Is: A Mathematical Approach with Applications - Tony Nader
<http://www.ijmac.com/wp-content/uploads/2015/12/all05.pdf>

Glasgow_Coma_Scale - https://en.wikipedia.org/wiki/Glasgow_Coma_Scale#Scoring
Levels of consciousness - https://en.wikipedia.org/wiki/Altered_level_of_consciousness#Definition

Strange loop - https://en.wikipedia.org/wiki/Strange_loop

I Am a Strange Loop - Douglas R. Hofstadter - <https://www.amazon.com/Am-Strange-Loop-Douglas-Hofstadter-ebook/dp/B004PYDBS0>

Psychedelic Information Theory: Shamanism in the Age of Reason - James L. Kent

<https://www.amazon.com/Psychedelic-Information-Theory-Shamanism-Reason/dp/1453760172>

Geometry of Trips - <https://psychonautwiki.org/wiki/Geometry>

Polynomial Root-finding and Polynomiography - Bhaman Kalantari (see section 'Polynomiography based on Voronoi coloring')

<https://www.amazon.com/Polynomial-Root-finding-Polynomiography-Bahman-Kalantari/dp/9812700595>

Pascalejandro – Alejandro Jodorowsky and Pascal Montandon - <http://pascalemontandon.com/albums-work/pascalejandro/>

Schmidt sting pain index - https://en.wikipedia.org/wiki/Schmidt_sting_pain_index

(9) BEYOND COMPLEX NUMBERS AND THE PLANE

Dual Quaternion - https://en.wikipedia.org/wiki/Dual_quaternion

Truly hypocomplex numbers : Unification of numbers and vectors - Redouane Bouhennache - <https://arxiv.org/pdf/1409.2757.pdf>

On a novel 3D hypercomplex number system - Shlomo Jacobi - <https://arxiv.org/pdf/1509.01459.pdf>

Generalizaciones de los números: de la aritmética a las variedades diferenciables - Fernando Etayo Gordejuela

<https://repositorio.unican.es/xmlui/bitstream/handle/10902/13817/2016GacRSocMatEspGeneralization.pdf?sequence=1&isAllowed=y>

Ensemble de nombres - Taladris, Silk78, Seirios, Telchar, Tigerfou and Médiat - <https://forums.futura-sciences.com/mathematiques/>

NOMBRES : CURIOSITÉS, THÉORIE, USAGE - Gérard Villemin - <http://villemin.gerard.free.fr/>

Theory of 3D complex space and complex number of 3D space, applications and experimental validation techniques - L.T. Abobda

https://www.researchgate.net/publication/301627462_Theory_of_3D_complex_space_and_complex_number_of_3D_space_applications_and_experimental_validation_techniques

Understanding & Using "nuReal numbers" 6.0 - John A. Shuster

https://www.researchgate.net/publication/362850567_Understanding_Using_nuReal_Numbers

Hoop Algebras - Roger Beresford (orthogonal roots of unity, conjugates and signs distinct of the usual cyclotomic machinery)

Hoop Algebras and Physics - https://library.wolfram.com/infocenter/MathSource/6198/Hoops&Physics.doc?file_id=6093

Hoop Algebra Supplement - https://library.wolfram.com/infocenter/MathSource/6198/HoopAlgebraSupplement.doc?file_id=6092

Wolfram library of Roger - <https://library.wolfram.com/infocenter/MathSource/6198/>

Wolfram demos of Roger - <https://demonstrations.wolfram.com/author.html?author=Roger+Beresford>

https://library.wolfram.com/infocenter/search/?search_results=1&search_person_id=4705

Algebraic loop - <https://mathworld.wolfram.com/AlgebraicLoop.html>

Moufang loop - https://groupprops.subwiki.org/wiki/Moufang_loop

Reinko Venema's blog about 3d numbers and miscellaneous topics - <http://3dcomplexnumbers.net/>

On the Extension of Complex Numbers - Nicholas Gaguin Houghton-Larsen

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.304.5052&rep=rep1&type=pdf>

Hypercomplex number in three dimensional spaces - Abdelkarim Assoul

https://www.researchgate.net/publication/308969073_Hypercomplex_number_in_three_dimensional_spaces_hal-01686021

Solving Quaternion Quadratic Equations - Peter Michael Jack - <https://archive.org/details/q2wp01>

A System of Three-Dimensional complex variables - E. Dale Martin

<https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19880004569.pdf>

An algorithm for multiplication of trigintaduonions – Alexandr Cariow and Galina Cariowa

<https://pdfs.semanticscholar.org/2a77/5a4f39ba0a0d1ceb34b3e0a1c2223117d680.pdf>

Quixal Quixotic algebra v0.1.4 (OpenCL library) - Jens Koeplinger - <https://bitbucket.org/jenskoeplinger/quixal/src/master/>

Foundations of transcomplex numbers An extension of the complex number system to four dimensions - Perez Ernesto

Circular and Hyperbolic Quaternions, Octonions, and Sedenions - Kevin Carmody

<https://www.sciencedirect.com/science/article/abs/pii/S0096300388901336>

A complex and Triplex framework for encoding the riemannian dual space-time topology equipped with order parameters fields - N. O. Schmidt

https://www.researchgate.net/publication/236735724_A_complex_and_triplex_framework_for_encoding_the_Riemannian_dual_space-time_topology_equipped_with_order_parameter_fields

Nonions - James Joseph Sylvester (at "A Synopsis of Linear Associative Algebra - James Byrnie Shaw")

<https://babel.hathitrust.org/cgi/pt?id=coo.31924062544949&view=1up&seq=97>

Vector algebra relations - https://en.wikipedia.org/wiki/Vector_algebra_relations

Paravector - <https://en.wikipedia.org/wiki/Paravector>

Multivector - <https://en.wikipedia.org/wiki/Multivector>

Pseudo-vector - <https://en.wikipedia.org/wiki/Pseudovector>

Pseudo-scalar - <https://en.wikipedia.org/wiki/Pseudoscalar>

Pseudotensor - <https://en.wikipedia.org/wiki/Pseudotensor>

Finite neutrosophic complex numbers. - F. Smarandache and W.B. Vasantha Kandasamy - https://digitalrepository.unm.edu/math_fsp/147/

A Three Dimensional Coordinate System for Complex Numbers - Greg Ehmka - <http://gregehmka.com/math-ebook>

Complex Numbers The Higher Dimensional Forms 2nd Edition - Dennis Morris

https://www.amazon.com/gp/product/1508677492/ref=db_a_def_rwt_bibl_vppi_i16

Hypercomplex Numbers in Geometry and Physics (Scientific Journal)

<https://web.archive.org/web/20210621004145/https://hypercomplex.xpsweb.com/section.php?lang=en&genre=3>

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